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The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Jessie N. Meiser, Student

Dr. Leslie Scott, Advisor

*Assessment of Pediatric Primary Care Providers Behaviors and Procedures Regarding Pediatric
Overweight and Obesity*

Jessie Meiser, BSN, RN, CPEN

University of Kentucky College of Nursing Spring 2014

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Dedication

In dedication to the many who have supported me throughout this journey over the past five years. Without the love and support of my family and friends I would not be where I am today. To my fellow students and friends (Shannon, Kari, and Andrea) who have supported me and helped me during difficult times. To my husband and daughter who have traveled with me literally and figuratively through this process.

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Introduction to DNP Capstone Project

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University of Kentucky Spring 2014

CAPSTONE INTRODUCTION

Childhood overweight/obesity is a critical public health problem with devastating consequences. Many factors have combined to create the epidemic, and primary care providers can play an important role in addressing the problem by identifying overweight/obese children and encouraging them to engage in healthy behaviors. However, providers face a number of competing priorities making it difficult for them to provide these services effectively without outside support.

Obesity has reached an epidemic proportion in the nation's youth. The Data Resource Center for Child and Adolescent Health (2011) found that 35.7% of children age 10 – 17 in Kentucky are overweight or obese. This is higher than the United States' (U.S.) national average of 31.3%. Kentucky also ranks seventh of the most obese states in the U.S. (Robert Wood Johnson Foundation, 2010). According to Flower, Perrin, Viadro, and Ammerman (2007) the obesity epidemic is one of the most predominant health conditions pediatric primary care providers face.

Childhood obesity can lead to many other chronic health problems including hypertension, diabetes, hyperlipidemia, and psychosocial problems. These health conditions can lead to increased morbidity and mortality for the nations' pediatric population. It has been estimated that one in three children born in 2000 will develop diabetes (McConnaughey, 2003). The primary care setting provides a unique opportunity to identify concerns and potential problems and educate children and parents. Well child or preventative visits have many components, which can be time consuming and leave little time for education and preventative screening. Although the statistics are alarming and guidelines related to pediatric overweight and obesity have been clearly established, many providers are not meeting the standards for screening, diagnosis, treatment, and education related to this epidemic.

Prior to beginning the capstone project three goals were established. The first goal was to determine the current practices in relation to practice guidelines for the screening, diagnosis, and treatment of pediatric overweight or obesity. The second goal was to examine reports and opinions from primary care providers regarding current practice and barriers to following practice guidelines. The final goal was to develop a reference tool for providers to utilize in practice to ensure they are following practice guidelines. Each of the three manuscripts addressed one of the three goals.

The first capstone manuscript is an integrative literature review regarding pediatric provider knowledge of the current practice guidelines of pediatric overweight/obesity management in the primary care setting. The review begins with current practice guidelines and recommendations for pediatric overweight/obesity and outlines evidence based practice research on this topic from 2008 to 2014. The manuscript also discusses the current reported practices of primary care providers and knowledge gaps identified regarding pediatric overweight/obesity management. Gaps in the literature pertaining to pediatric overweight/obesity and recommendations for future research are included.

The second capstone manuscript summarizes a 2014 investigation: “Assessment of Pediatric Primary Care Providers Behaviors and Procedures Regarding Pediatric Overweight and Obesity,” a survey administered to pediatric primary care providers in the state of Kentucky belonging to the Kentucky Coalition of Nurse Practitioners and Nurse Midwives and/or the Kentucky Chapter of the American Academy of Pediatrics. The survey results indicated that there is a knowledge deficit in relation to the current practice guidelines for identification, management, and treatment of pediatric overweight/obesity and a lack of community and referral resources available to primary care providers.

The final manuscript is an educational reference resource for providers, developed in

response to the findings of the literature review and survey results. The need for additional education regarding, screening, identification, diagnosis, and treatment, in the primary care setting, was identified in the pediatric obesity survey. “Pediatric Obesity Management in the Primary Care Setting: Reference Guide for Providers” includes an algorithm for providers outlining the steps to successful management of pediatric overweight/obesity in the primary care setting.

Manuscript 1

Pediatric Obesity Management in the Primary Care Setting: An Integrative Review

Jessie Meiser, BSN, RN, CPEN

Abstract

Purpose: Pediatric obesity is a growing epidemic across the United States. Its effects can be seen widespread across the state of Kentucky as the incidence has increased 90 percent over the last 15 years (Trust for America's Health, 2011). Pediatric obesity can lead to comorbidities such as hypertension, hyperlipidemia, diabetes, and depression (Walsh et al., 2013). Pediatric obesity can also lead to a higher incidence of obesity in adulthood. An integrative review was conducted to examine current practices of pediatric and family primary care providers and the availability of resources, in relation to current practice guidelines for the screening, diagnosis, and treatment of pediatric overweight/obesity.

Methods: An integrative literature search of studies published between 2004 and 2014 was conducted using the Nursing Allied Health Literature (CINAHL), Pub Med, and EBSCO Host database. Key words used included; a) pediatric obesity, b) pediatric obesity guidelines, c) pediatric obesity in primary care, d) pediatric overweight, e) pediatric obesity comorbidities. Articles were reviewed that addressed pediatric overweight/obesity practices in the primary care setting in relation to the a) screening, b) evaluation, c) diagnosis, d) treatment, and e) education provided.

Results: Ten articles were found to meet the search criteria and saturate the evidence. The articles ranged from 2005 to 2013 and included evidence related to the screening practices and diagnosis reporting practices of primary care providers in addition to perceived barriers to the screening, identification, and treatment of overweight and obesity in the pediatric population. Articles included retrospective chart reviews, interviews, randomized controlled pilot programs, and practice interventions. Common themes included the obesity care recommendations, barriers to intervention and referral, and lack of resources for the primary care providers.

Conclusions: Findings revealed that primary care providers do not always have the resources within the community for referral of overweight/obese children. Lack of community resources can lead to mismanagement and decreased screening practices for comorbidities. Research also revealed that a clinical diagnosis for obesity in pediatric patients meeting diagnostic criteria was low at 15.4% (Walsh, et al, 2013). Results indicated barriers to screening, diagnosis, and treatment of pediatric overweight/obesity for primary care providers are related to time constraints, limited knowledge, lack of community resources, and lack of perceived parental motivation.

Gaps In Literature: Gaps in the literature included current knowledge base of primary care providers in regards to current pediatric overweight/obesity practice guidelines. Identification of current knowledge could assist in educational programs targeting primary care providers. Research relevant to identifying interventions successful in improving assessment skills, treatment, and prevention of childhood overweight/obesity are also needed. Additional research targeted at interventions proven successful at increasing identification of obese children would aide in the ability to develop an education plan for providers. Identifying patient and provider factors that increase the incidence of obesity diagnosis is an area that could be targeted for future research.

Relevance: Identifying current pediatric overweight/obesity clinical practice guidelines knowledge gaps of providers could provide the opportunity for development of applicable resources and educational programs. Interventions to increase the likelihood of an obese/overweight diagnosis could include education about diagnostic criteria and the importance of screening practices at every visit. Increasing provider education regarding clinical guidelines for screening practices could increase the incidence of diagnosis and subspecialty referral.

Integrative Review: Pediatric Obesity Management in the Primary Care Setting

Background

Managing pediatric overweight/obesity in the primary care setting can be a challenging and time consuming task. There have been many research studies and national movements focused on the prevention and treatment of pediatric obesity. Although many experts agree that pediatric obesity has to be identified and addressed in the primary care setting research continues to show that primary providers are not familiar with, and are not adhering to current practice guidelines. With a tripling in the adolescent obesity rate over the last 20 years in the US (Butryn et al., 2010) this epidemic is one of the most prevalent chronic conditions facing pediatric care providers (Flower et al., 2007).

The primary care setting provides a unique opportunity to identify overweight/obese children and educate children and parents. Well child or preventative visits have many components, which can be time consuming leaving little time for education and preventative screening. Passehl et al. (2004) identified preventative care as a defining component of pediatric primary care health screening visits. This component of the well child exam can be a daunting task and providers may find numerous unsuccessful efforts disheartening. Primary providers have identified many barriers to following recommended pediatric overweight/obesity practice guidelines, including lack of parental involvement, lack of behavior management strategies, and lack of supportive services within the community (Findholt et al., 2013).

Although guidelines have been clearly established a study by Klein et al., (2010) found that only half of primary care providers report assessing BMI on pediatric patients and many reported that time constraints make it difficult to counsel patients and that this counseling often

produces poor results. Providers also reported that having diet and exercise recommendation resources in the office would be helpful.

The focus of this integrative review was to examine current practices of primary care providers in the evaluation, diagnosis, treatment, management, and prevention of overweight and obesity. Identifying current practices could prove helpful in designing future guidelines and/or education and resources for providers.

Aim

The primary objective of this literature review was to investigate current clinical practices of primary care providers in relation to pediatric overweight/obesity. Articles in relation to current barriers in the primary care setting and resources providers found useful were also included. An integrative review was performed to identify articles relevant to the aim. Inclusion criteria included articles published after 2004 written in English. Articles published related to pediatric overweight/obesity educational interventions, screening methods, and referral practices in the primary care setting were reviewed. Identifying screening and referral patterns can give insight into where to focus education for primary care providers. Articles meeting inclusion criteria were selected from a search of Cumulative Index to Nursing and Allied Health (CINAHL), PubMed, and EBSCO host database. The literature review involved searching for studies about the identification and treatment of pediatric obesity by primary care providers in the outpatient setting, and the feasibility of current interventions and guidelines.

Guidelines

In 2008, the Pediatric Endocrine Society developed a clinical practice guideline in response to the current increasing trend of pediatric overweight and obesity. The guideline, created to prevent and decrease pediatric overweight/obesity and comorbidities, serves as a

practice resource for primary care providers. The guidelines aids in the diagnosis and management of obese or overweight pediatric patients, and consists of evidence-based recommendations concerning diagnostic criteria, available treatments, and measures to prevent overweight/obesity.

Many health care providers may fail to diagnose overweight or obesity in pediatric patients due to failure to use an accurate measure. The guideline supports the use of the body mass index as the appropriate scale for determination of weight status; this is also the recommendation of the American Academy of Pediatrics. Overweight is defined as a BMI in the 85th percentile and obese as a BMI greater than the 95th percentile. The recommendation brought forth by the Endocrine Society is also to evaluate children with a BMI in at least the 85th percentile for associated co-morbidities and complications such as diabetes, dyslipidemia, and hypertension. The use of this guideline serves as a resource for practitioners in the identification and early detection of children who are overweight and/or obese and the diagnosis and treatment of possible comorbidities. Not only does the CDC recommend using BMI for diagnosis of overweight or obesity in children, the American Academy of Pediatrics also published a policy statement recommending the annual calculation of BMI as part of routine health care for children and adolescents (Flower, 2007). Using these recommendations as a guideline the Endocrine Society made the recommendation for the use of the BMI for standardized diagnosis and followed the parameters set forth by the CDC.

The guideline is targeted at obese or overweight adolescents and children and gives practitioners a guide for not only the diagnosis, but also treatment modalities once diagnosis is made. Families should be encouraged to eat timely, regular meals, particularly breakfast, and to avoid snacks during the day. The guideline also makes physical activity

recommendations including supporting at least 60 minutes of moderate to vigorous physical activity daily and supporting a decrease in time spent in sedentary activities, such as watching television, playing video games, or using computers for recreation. This places emphasis on the treatment of obesity as a chronic disease. The guidelines also provide suggestions regarding when and what medications to initiate if pharmacotherapy is needed. Not only should practitioners screen, monitor, and trend BMI in patients the prevention of overweight or obesity is also of the utmost importance.

The guidelines have set out obesity prevention recommendations for practitioners to follow and have identified barriers to implementations are examined as well. The guideline serves as a well-developed resource available to clinicians as an aide to eliminate or account for such barriers. The task force key in the compilation of the guideline included a member of the Endocrine Society, eight experts on the topic of pediatric obesity, and a medical writer. Systematic literature reviews were used to formulate treatment and prevention recommendations.

Results

Following a search of the databases, 10 studies were found that met search criteria and addressed the aims of the review. Pilot studies were the most prevalent study design (4), followed by retrospective medical record review (4), in-depth interviews (1), a cross-sectional descriptive analytical (1), and a cohort study (1). Keywords in the studies included: obesity, children, primary care, overweight, and behavioral intervention. Studies examined common themes including: primary care obesity treatment, costs associated with childhood obesity interventions, successful interventions in obesity treatment, and incidence of obesity diagnosis in primary care. Articles focused on research on screening, identifying and treating obesity in the primary care setting were reviewed.

Primary Care Setting Implications

With electronic health records (EHRs) becoming a standard of care and the national mandate (Simborg, 2008), the management of overweight and obesity can be more closely monitored. Otero et al., (2011) found that the prevalence of pediatric overweight and obesity was higher than the actual diagnosis of overweight or obesity recorded in the electronic health record. This study found that only 11.5% of obese or overweight patients had the diagnosis registered in their EHR. In a similar study O'Brien et al., (2004) found that only 53% of pediatric patients identified by BMI measures as overweight or obese had the diagnosis in the medical record. An additional study by Walsh et al. (2013) found that although 19.5% of children in their study had a BMI indicative of an overweight or obese diagnosis, only 7% had a documented overweight or obese ICD-9 code and only 15.2% had a positive response documented to provider questions such as "Does the patient now have obesity?" Making the diagnosis of overweight or obesity in the medical record allows for more accurate monitoring and follow-up care.

In order to make the appropriate weight status diagnosis a child's BMI must be assessed and documented. Caprio and Genel (2005) found that less than 20% of pediatricians reported assessing BMI of children seen in their practice. Not assessing BMI can lead to missed diagnosis of overweight/obesity and may cause providers to under screen for associated comorbidities. Examining the small percentage of documented diagnosis in relation to BMI, determining providers' knowledge of recommended guidelines is a necessity. Not only is assessing BMI important, but making the diagnosis can also aid in follow-up care and maintenance.

Many studies reviewed addressed perceived barriers identified by providers preventing them from following current practice guidelines. During in-depth interviews with primary care

providers, Findholt et al. (2013) found that barriers to addressing overweight and obesity in the primary care setting fell into five distinct categories; barriers related to practice (including time constraints, lack of reimbursement, and few opportunities to detect obesity), the clinician (limited knowledge), the family/patient (family lifestyle and lack of parental motivation to change, low family income and lack of health insurance, sensitivity of the issue), the community (including lack of pediatric subspecialists and multidisciplinary/tertiary care services, few community resources), and the sociocultural environment (sociocultural influences, high prevalence of childhood obesity). Knowing and incorporating these perceived barriers into an education intervention could lead to increased success. Provider personal characteristics and practices can also influence their management practices of overweight or obesity. Characteristics such as provider weight, eating habits, and exercise regimens may play a role in their approach (Hopkins et al., 2011). Barriers identified in the articles reviewed may affect providers' adherence to current practice guidelines.

Although identification and diagnosis of overweight or obesity in the primary setting can be challenging, Kwapiszewski and Wallace (2011) found that sixty-three percent of children identified as obese or overweight in the primary care setting and integrated into a behavioral modification weight modification program lost weight. Specialty referral and placement in behavioral modification programs has shown success in weight loss, but the first key step is identification and diagnosis. A similar pilot study performed by Wald et al. (2011) found that with a 15 week in-office intervention obese children lost 2.40 lbs (+/- 5.24) compared with a weight gain of 3.45 lb (+/- 4.31) among the control group.

The primary care setting yields an ideal situation for education and treatment of overweight and obesity. Children are seen frequently for preventative care and treatment of acute illnesses and parents are generally available to participate in the education and treatment plan.

O'Connor et al. (2011) found that prior to implementing a pediatric obesity intervention in the primary care setting the feasibility of the implementation must be measured. Feasibility measures included: 1) ability to recruit participants; 2) proportion of participants who attended baseline and post-intervention data collection; 3) participant completion of program; 4) percentage of behaviors targeted; and 5) participant satisfaction with program. Ensuring program intervention feasibility is an important preliminary step prior to implementation. Primary care providers should utilize the primary care setting and annual or episodic visits as an opportunity for early detection and treatment of overweight/obesity. The initial step in treatment of pediatric obesity is timely identification. An important component of providing education or behavioral modification intervention in the primary care setting is evaluating for child and parent readiness for change. According to a pilot study performed by Kwapiszewski and Wallace (2011) using the patient empowerment readiness model (PERM) children and parents can be evaluated for readiness or buy-in. The PERM identifies four attitudes related to change: 1) precontemplative; 2) contemplative/preparation; 3) assessment of readiness for change; and 4) action/maintenance. According to this study Kwapiszewski and Wallace (2011) found that 63% of children identified as ready for change, using the PERM model, had a reduction in BMI once enrolled in a behavioral modification program. Treatment programs within the primary care setting can allow for close monitoring of BMI and weight status.

This literature review identified key components that need to be addressed in regards to the screening, identification, diagnosis, and treatment of pediatric overweight and obesity.

Documentation of diagnosis of overweight or obesity, barriers to diagnosis or treatment, and feasibility of a treatment or educational intervention were addressed. Implementation of a pediatric overweight/obesity educational program is dependent upon analyzing provider and facility barriers.

Limitations

Limitations of this literature review include that many of the studies were pilot programs (Kwapiszewski and Wallace, 2011; Wald et al., 2011; and Brandt et al., 2013) to address the successfulness of in office interventions. Although helpful, it is not always feasible to generalize these findings. Interventions successful in one office may not be successful in others. Studies focusing on medical record review were based on findings in electronic health records, paper documentation was not included, which could skew the findings. Not all articles included advanced practice nurses or physician assistants in the data collection process, which could also impact the results. Studies also did not focus on parents' perceptions or satisfaction with current practices or processes. There is limited information on the current practices regarding children under the age of 10 in regards to pediatric overweight or obesity in the primary care setting. Many studies focused on adolescents (10 to 17 years) which could be a limitation considering the developmental differences of children under ten years old.

Implications for Future Research

Limited information was found during the process of this literature review in regard to providers' reported rates of overweight and obesity in comparison with actual diagnosis made in patients' medical records. Information regarding discrepancies between reported practices and actual diagnoses could be helpful. This information could aid in identification of where to focus provider education efforts. The first step in education is helping providers understand the

definition of overweight or obesity based on the American Academy of Pediatrics guidelines. Table 1 outlines the expert committee recommendations for the current definitions of underweight, healthy weight, overweight, and obese. These definitions are based on pediatric percentiles and could aide providers in identifying what diagnosis should be made. Provider personal practices were also identified in research studies as being possible influences in treatment practices for overweight or obesity. Additional studies should be performed to identify to what extent providers personal behaviors may be affecting their practice behaviors related to obesity screening, identification, diagnosis and treatment.

The articles included in this integrative review highlighted several key points and identified current research findings in regards to current reported and documented practices of primary care providers. Utilizing the findings in this review, future research focused on providers' current reported practices, knowledge of practice guidelines, and personal behaviors would aid in the development of programs aimed at effective prevention, screening, diagnosis, treatment, and management of pediatric overweight/obesity.

Table 1

Weight Status By BMI

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

(Barlow, 2007)

Manuscript 2

Assessment of Pediatric Primary Care Providers Behaviors and Procedures Regarding
Pediatric Overweight and Obesity

Jessie Meiser, BSN, RN, CPEN

Abstract

Objective: The objective of this study is to assess pediatric primary care providers' current practices regarding the screening, identification, treatment, education, evaluation of comorbidities, and specialty referral of overweight or obese pediatric patients. The aims of this study are to (1) assess the current reported practices of pediatric primary care providers regarding childhood weight management in patients age 3 to 15 and (2) assess the comfort level of pediatric primary care providers regarding the treatment, management, and referral of pediatric patients who are or are at risk of becoming obese or overweight (ages 3 to 15).

Methods: A 22 question survey instrument, with content validity verified by pediatrician, was administered to all members of the Kentucky Coalition of Nurse Practitioners and Nurse Midwives (KCNPNM) organizational listserv and the Kentucky Chapter of the American Academy of Pediatrics (AAP) listserv. Refer to Appendix A for survey.

Results: The instrument was completed entirely by 78 providers. Providers included medical doctors, nurse practitioners, and physician assistants.

Conclusions: Providers need additional education regarding the current clinical practice guidelines for the screening, diagnosis, and treatment process of pediatric overweight/obesity. Provider reports indicate resources are not sufficient resulting in guidelines not being adhered to. Time constraint was also a reported provider barrier. Provider barriers must be assessed prior to implementation of educational intervention.

Assessment of Pediatric Primary Care Providers Behaviors and Procedures Regarding Pediatric Overweight and Obesity

Introduction

Obesity is a prevalent health concern that has reached epidemic proportions among the nation's youth. In 2012, more than one third of children and adolescents were overweight or obese (Ogden et al., 2012). In Kentucky it is estimated that 35.7 % of children are overweight or obese (Alliance For a Healthier Generation, 2013). This is higher than the national average rate of childhood overweight and obesity of 30.6%. Kentucky also ranks seventh among the most obese states (Robert Wood Johnson Foundation, 2010). According to the CDC (2009 and 2010) 17.6 % of middle school aged children (CDC, 2010) and 15.6% of elementary aged children are obese in Kentucky, although the statistics are alarming and guidelines have been clearly established providers are not meeting the standards for screening, diagnosis, treatment, and education. Childhood obesity has more than doubled in children and quadrupled in adolescents in the past 30 years (Ogden, et al, 2012), making this epidemic one of the most prevalent chronic conditions facing pediatric care providers (Flower et al., 2007). Childhood obesity can lead to many other chronic health problems including hypertension, diabetes, hyperlipidemia, and psychosocial problems (August et al., 2008). These health conditions can lead to increased morbidity and mortality for the nations' pediatric and population (August et al., 2008). It has been estimated that 1 in 3 children born in 2000 will develop diabetes (McConnaughey, 2003).

Obesity has negative effects on every system in a child's body including the heart and lungs, muscles and bones, kidneys and digestive tract. Hormones controlling blood sugar and puberty are also affected (Singh, et al, 2008). Being overweight or obese can have negative

social and emotional consequences as well. Obesity in youth also increases the odds of remaining obese or overweight into adulthood and in turn increasing the odds of chronic diseases later in life (Singh, et al, 2008). The primary care setting provides a unique opportunity to identify and educate children and parents. Well child or preventative visits have many components, which can be time consuming leaving little time for education and preventative screening. Passehl, et al. (2004) identified preventative care as a defining component of pediatric primary care health screening visits. This component of the well child exam can be time-consuming and challenging and providers may find numerous unsuccessful efforts disheartening. Many barriers have been identified by primary providers, including; lack of parental involvement, lack of behavior management strategies, and lack of supportive services within the community. The United States Preventative Task Force (USPTF) recommends that clinicians screen children aged 6 years and older for obesity and offer or refer them to comprehensive, intensive behavioral interventions to promote improvement in weight status. Despite evidence of the effectiveness of preventive services and the development of published national guidelines, actual rates of delivery of preventive health care services remain low. Although guidelines have been clearly established a study by Klein et al. (2010) found that approximately half of primary care providers report assessing BMI on pediatric patients and many reported time constraints make it difficult to counsel patients and that this counseling many times has poor results. Providers also reported that having diet and exercise recommendation resources in office would be helpful.

Methods

Eligibility

The study was approved by the Institutional Review Board of the University of

Kentucky. Study participants were recruited from the Kentucky Coalition of Nurse Practitioners and Nurse Midwives (KCNPNM) and the Kentucky Chapter of the American Academy of Pediatrics (AAP). The Kentucky Coalition of Nurse Practitioners and Nurse Midwives (KCNPNM) assists Nurse Practitioners in staying competent and up to date with quality, accessible, and compassionate health care. The organization administrator, Lynne Cobb, assisted with administration of the survey. The Kentucky Chapter of the American Academy of Pediatrics promotes pediatric wellness and provides support for providers by advocating for evidence-based medicine and dissemination of practice guidelines. The executive director, Mary York, assisted with submission of the survey to the listserv.

Members of the organizations received an email inviting them to participate in the survey. Inclusion criteria included the ability to read/write English, currently practicing, and at least 10 percent of the providers population served must be under the age of 18. Exclusion criteria included patient population not being made up of at least 10 percent pediatric patients, and not being able to read/write English. Participants had 2 months to complete the survey through REDCap, a secure online web based survey tool. All responses were confidential and researchers did not have access to identifying information.

Recruitment

Survey participation request letters were sent in February and reminder emails were sent in March. The survey window was open for 2 full months. A waiver of consent letter was sent along with the survey invitation explaining to providers the risks and benefits of completing the survey. Participants agreed to the waiver of consent by visiting the link to complete the survey. Providers needed internet and computer and email access in order to complete the study.

Design

The study employed a cross sectional design and was based on a convenience sample from the two organizational listserv members. Electronic consent was obtained and participants consented if they proceeded to participate in the study. There were 22 survey question items, created by the researcher (Appendix A). Questions were validated by a pediatrician. Participants could stop the survey at any point. REDCap was used to create the survey tool, store the data and to collect, and analyze survey results. Resources included internet and computer access.

Theoretical Framework

The social cognitive theory was used in this study (Figure 1). According to Bandura (2004) social cognitive theory (SCT) is a theoretical framework for eliciting behavior change. The SCT is based on the premise that human behavior is the result of environmental, personal, and behavioral factors. The theory emphasizes modeling behaviors, symbolization, and anticipation of future behaviors, self-regulation, and self-efficacy (Bandura, 2004). It allows for the incorporation of the environment, which includes the home setting, the community, and the clinic, which addresses many barriers reported by providers. Many studies indicate children develop physical activity and diet behaviors through observation of parents/guardians. The behavior aspect of the model includes the current behaviors of not only the children, but also the primary care providers caring for them. Personal factors including socioeconomic status, genetics, and family behaviors can affect the ability for lasting change. Environmental factors such as the child's location of residence and the resources within the community can also affect the intervention choice and successfulness.

Data Analysis

The survey instrument was completed entirely by 78 providers. Providers included nurse practitioners, physicians, and physician assistants. Providers were not asked to identify their

current practicing role. Means, standard deviations and frequencies were used to analyze the data. T-tests were used to determine relationship between various question responses. All statistical data were analyzed using SPSS. A p less than or equal to 0.05 was considered significant for the study.

Risks and Precautions

The risks to participating in the research study were minimal. Some of the questions the survey asked may have made participants feel uncomfortable. Participants were informed they did not have to answer any questions they did not feel comfortable with, which helped to minimize this risk. Providers were informed they could stop the survey at any point and that completion of the survey was entirely voluntary. Participants were made aware that all responses would be kept confidential with no identifying data obtained .

The email sent with the survey contained the contact information for the primary investigator. There is no cost to perform the study. REDCap is a free Internet tool for university students. The benefits associated with the knowledge gained from this study may allow the researches to identify knowledge deficits regarding pediatric obesity management in the community setting in comparison with current practice guidelines.

Survey Results

Of those completing the survey (n = 78) 50 percent (n = 39) reported they were not familiar with current practice guidelines for pediatric overweight/obesity. Table 2 shows screening practices reported by providers. TSH and Free T4 is not currently part of the recommended lab screening tests in the clinical practice guidelines, although 74% of providers reported using this lab test as a screening tool. Hyperlipidemia and liver enzyme testing are part of the current guidelines and 85% and 58% respectively reported obtaining these labs when BMI

was elevated in a child. Over half of providers reported obtaining hemoglobin a1c as a screening lab, which is not part of the current practice guideline, and not part of evidence-based practice recommendations.

Current practice guidelines include using BMI as determination of weight status, BMI greater than the 85th percentile is considered overweight while BMI greater than the 95th percentile is considered obese. If a child's BMI is greater than the 85th percentile providers should screen for comorbidities. Eighteen primary care providers responding to the survey, reported being aware of current practice guidelines but also reported they did not refer patients for elevated BMI. Providers were asked if they had a referral resource within their community 62% (n = 48) reported they did not have a referral resource available for their patients. The most predominant barriers reported to providing weight loss education were time (46%, n = 36), knowledge deficit (9%, n = 7), and lack of referral resources (44%, n = 34). Other barriers reported included family understanding and beliefs, parental attitude, lack of interest from child and parents, parental resistance. The literature review revealed a possible association between provider personal behaviors and referral practices within the practice setting; however this study indicated no significant relationship ($p = 0.6571$) between provider personal behaviors and referral practices.

Of providers that completed the survey instrument 78% (n = 61) reported they could benefit from educational materials regarding screening guidelines for pediatric overweight/obesity. Furthermore 65% (n = 51) of providers felt that they could use additional education regarding screening guidelines: 62% (n = 48) reported wanting additional education on specialty referral guidelines: and 85% (n = 66) reported educational handouts for patients and families would be helpful. Responses of the survey questions indicated

that there is a need for additional educational resources for pediatric primary care providers.

Although many national incentives and guidelines have been published and endorsed providers face many barriers when trying to implement guidelines. Evaluating current practice behaviors gives insight into where to focus interventions and educational endeavors.

Limitations

This study has several limitations which future research could address. The study results are unable to be generalized to all primary care providers because a convenience sample of providers in the state of Kentucky was used. Providers belonging to two organizations within the state received surveys. The responses to the survey questions were also self report and providers could have misreported current practices. This would lead to misrepresentation of current practices in the primary care setting. Survey responses were not compared to actual documentation of BMI or pediatric overweight or obesity diagnosis. The survey asks questions in relation to community resources, but information of where the provider practices is not obtained, making it difficult to validate response or to know where to target referral resource information. Survey questions were developed by the researcher and therefore are not standardized questions, therefore limiting the ability to compare the response results with other survey data. Survey questions also allow for opinions of primary care providers rather than objective data.

This study can be used to guide educational resources for primary care providers in order to enhance knowledge of current practice guidelines and screening practice recommendations.

Implications for Future Research

Future research should include providers from all areas of the country in order to get a more accurate sample of current obesity practices. Identifying provider role and length of time practicing could be beneficial in identifying where to focus educational resources for various

titles. Although barriers were identified in the study provider location was not determined in order to validate barriers and community resources available. Many barriers identified included lack of motivation of parents and families. Research identifying motivating factors for families could prove beneficial and could decrease provider frustrations.

Discussion

This study not only revealed that many primary care providers are not familiar with the current practice guidelines in relation to pediatric overweight/obesity, but also that they lack the resources to implement them entirely. Primary care providers face many barriers when attempting to follow updated clinical practice guidelines. Providers know and understand the importance of screening for and diagnosing pediatric overweight and obesity in pediatrics, but various factors seem to impede the process. Barriers must be identified and addressed prior to the implementation of educational interventions. Reported barriers in the research consistently fell into five categories; practice, clinician, family/patient, community, and sociocultural. Finding ways to remove these barriers will help decrease the incidence of pediatric overweight/obesity.

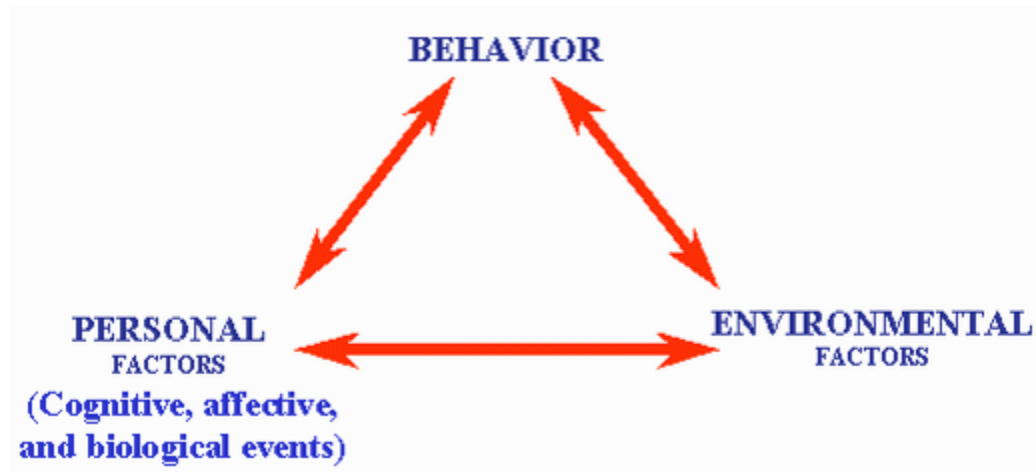
Studies have shown that diagnosis of overweight and obesity (based on ICD 9 codes) is not consistently being documented in the medical record (O'Brien, et al., 2004). If this is the case actual incidence rates of pediatric overweight/obesity could be much higher than current estimates. Providers report following various components of the guidelines, but all components are not consistently adhered to. Not following guidelines makes determining success rates of intervention programs challenging.

With the ever-changing guidelines and recommendations in regards to the screening, monitoring, diagnosis and treatment of pediatric overweight/obesity providers may find it difficult to maintain competency. Presenting primary care providers with yearly updates on

clinical practice guidelines and educational resources and suggestions for overcoming barriers could increase compliance. This study shows providers are lacking resources whether in practice or within the community. A common theme emerged in this study: providers do not feel that they have enough support, resources, and knowledge to follow all clinical practice guidelines and to adequately screen, diagnose, and treat/manage pediatric overweight/obesity.

Figure 1:

Social Cognitive Theory



(Pajares, 2002)

Table 2:**Screening Behaviors**

TSH and Free T4	N	%	Current Guideline
Yes	58	74	No
No	20	26	No
Total Cholesterol, LDL, and HDL	N	%	Current Guideline
Yes	66	85	Yes
No	12	15	Yes
Liver Enzymes	N	%	Current Guideline
Yes	45	58	Yes
No	33	42	Yes
Glucose	N	%	Current Guideline
Yes	60	77	Yes
No	18	18	Yes
Hemoglobin a1c	N	%	Current Guideline
Yes	47	60	No
No	31	40	No

Manuscript 3

Pediatric Obesity Management in the Primary Care Setting: Reference Guide for Providers

Jessie Meiser, BSN, RN, CPEN

Pediatric Obesity Management in the Primary Care Setting: Reference Guide for Providers

An estimated 35.7% of children and adolescents in the state of Kentucky are currently obese or overweight (The Data Resource Center for Child and Adolescent Health, 2011). This number is alarming considering the comorbidities associated with obesity. Throughout the nation obesity has reached epidemic proportions and identifying successful interventions has proven to be a difficult task. With the implementation and advancements in electronic health records (EHRs) identification and diagnosis of overweight and obesity can be more accurately monitored. EHRs can also be a helpful tool in prompting and alerting providers to weight gaining trends in their patients and in alerting them to incorporate the overweight diagnosis. Otero, et al (2011) found that only 11.5% of patients, who by anthropometric data were classified as obese or overweight, had an obese or overweight diagnosis documented in the EHR. The prevalence of under-diagnosis identifies concerns to be addressed in the primary care setting. Lack of proper training, resources, and time constraints may lead to the problem of overweight or obesity not being properly acknowledged and identified.

Primary care providers are in a unique and ideal position to provide consistent screening and counseling regarding healthy weight status and diet and exercise regimens. That being said, primary care providers have reported a lack of resources in primary practice to adequately provide this education and counseling. Having a resource algorithm assisting providers through the screening, diagnosis, and management process could increase confidence and rates of diagnosis in correlation with increased BMI.

Using credible and established resources can aid providers and families tackle this epidemic. The 5210 program incorporates diet and exercise into a families' daily life in an easy to remember algorithm. It incorporates a lifestyle change that can have lasting results. Providers

should assess parental and child readiness prior to initiating a weight maintenance program and should focus programs on healthy weight maintenance versus weight loss.

Providers surveyed indicated the need for referral resources for families and information regarding current guidelines. Below are several reference tools for providers including diagnostic guidelines, parent information, and quick reference guides. Table 3 includes references websites for providers and families that address many of the common barriers identified in the survey.

Table 3:

Parent and Provider References

Eating Healthy on a Budget	https://snap.nal.usda.gov/resource-library/eat-right-when-moneys-tight	
5210 Program	http://www.letsgo.org/	
Exercising Indoors	http://www.urmc.rochester.edu/community-health/community-partnerships/documents/IndoorPhysicalActivityIdeasforKids.pdf http://pbskids.org/zoom/activities/games/	
Talking with Children	http://www.stopobesityalliance.org/wp-content/themes/stopobesityalliance/pdfs/stopobesityalliance-weighin.pdf	
How to Discuss Weight Status with Parents	http://www.yaleruddcenter.org/resources/bias_toolkit/toolkit/Module-6/6-01-PediatriciansHowTalk.pdf	
Building Self-Esteem	http://www.loveourchildrenusa.org/teachingkidselfesteem.php	

Figure 2:

Lowering the Scale on Pediatric Obesity

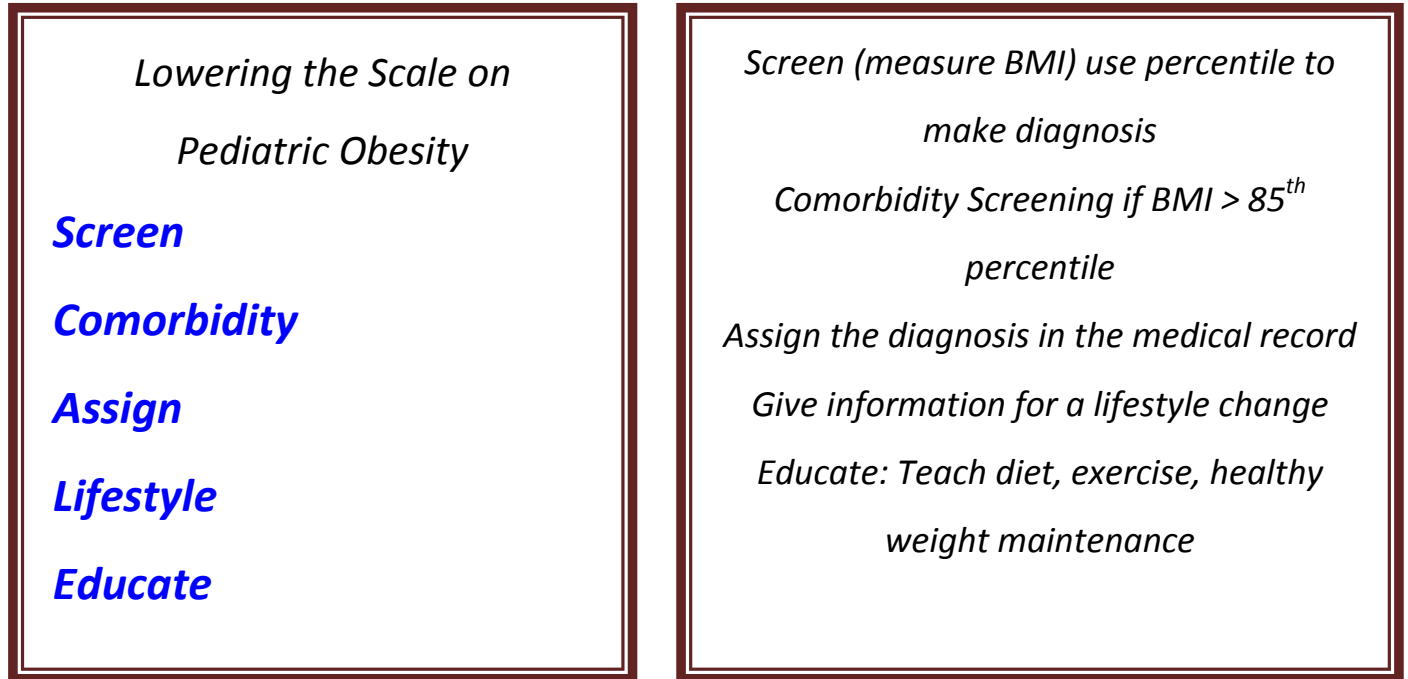


Figure 3:

BMI Diagnosis Algorithm

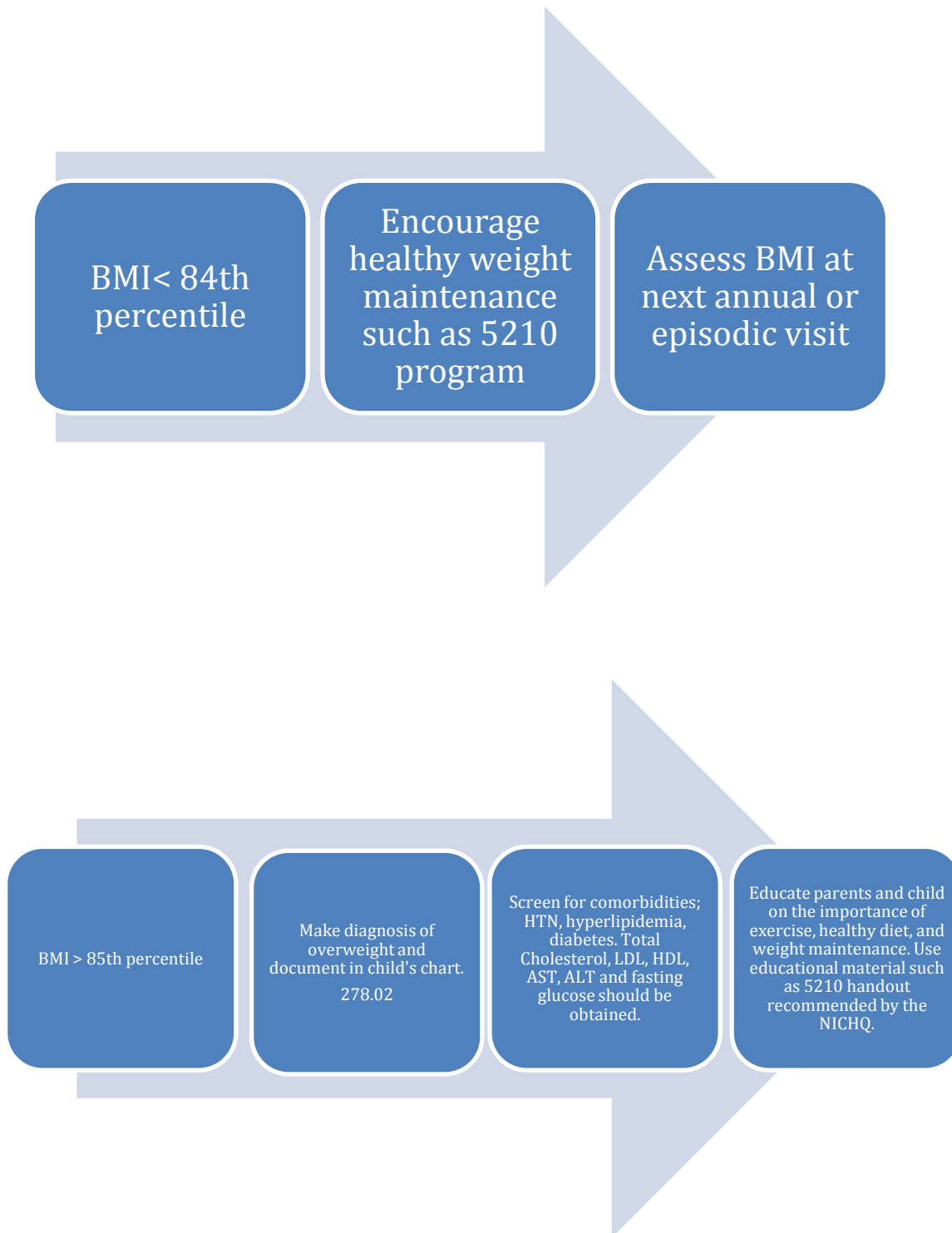
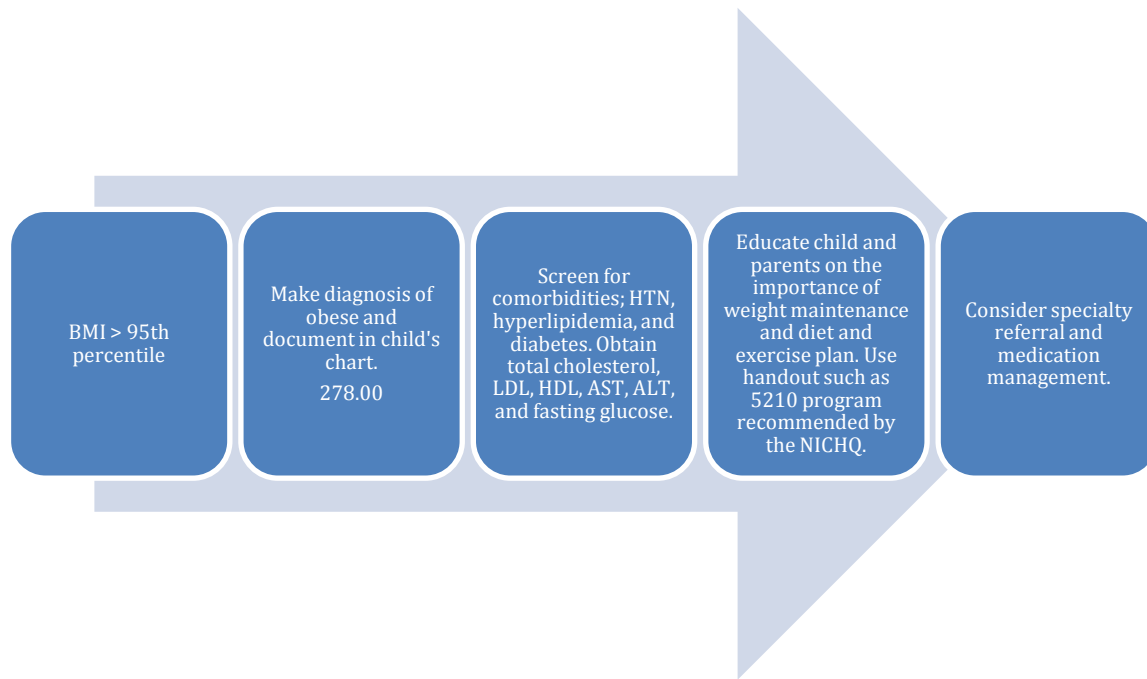


Figure 3 cont:

BMI Diagnosis Algorithm



Utilizing these references providers can ensure guidelines are followed and maximize use of time spent during well visits.

Conclusion

Pediatric primary care providers are aware of the overweight/obesity epidemic, knowledge of the complications associated with overweight and obesity are clear, so what is keeping providers from following through with practice guidelines? There are many contributing factors to overweight/obesity making the task of decreasing the incidence all the more challenging. Providers face barriers daily regarding the screening and management of overweight/obesity and educators must address these barriers in order to determine a feasible intervention. Many factors contribute to the presence of barriers including; patient population, time, knowledge of guidelines, family/parent knowledge, socioeconomic status, cultural environment, and practice environment. Feasibility measures include determining, through a pilot study, if the intervention has the ability to recruit participants, if an adequate proportion of participants are present for the baseline and post-intervention data collection, the participant completion percentage, percentage of behaviors targeted and participant satisfaction with the program. Determining feasibility should be practice/location specific as various barriers vary by location and provider. Parental involvement is crucial in achieving healthy weight status.

Provider knowledge can be addressed by providing quick reference guides making the screening process, diagnosis, and caregiver education more manageable. Reference guides as well as electronic health record hard stops can increase the guideline adherence. With diagnoses inconsistent with BMI percentiles the obesity epidemic could be more profound than current research shows. Without adherence to all guidelines determining success is difficult. Obesity screening should become a mandatory component of all well-child visits. Documentation of diagnosis of weight status is crucial for following the child's progression. Providing practitioners with the resources needed to follow through with all clinical practice guidelines can lead to

information on the success of the guidelines and where alterations need to be made.

Moving forward efforts should be focused on intervention and guideline feasibility and identification of provider barriers. Determining interventions successful at removing barriers could prove to be the answer to the consistent rise in the pediatric overweight/obesity epidemic.

Appendix A

Pediatric Obesity Survey

1. Are you aware of the current practice guidelines for the prevention/treatment/referral process for weight management in the pediatric patient?

No

Yes

2. At what BMI percentile do you refer a child to a specialist?

80th percentile

85th percentile

90th percentile

95th percentile

Other percentile

I do not refer

3. At what other percentile do you refer to a specialist?_____

4. Do you have a referral resource for children in your community identified as overweight or obese?

No

Yes

5. When you give educational materials regarding weight status which of the following best describes what you use? Check all that apply.

Paper handouts

Verbal education while in office

Verbal education and handouts

Other

What other types of information formats do you use?

6. If anything, what prevents you from screening/providing education regarding weight management (for example, diet and exercise recommendations)?

Time

Knowledge deficit

Lack of referral resources

Other

7. What else keeps you from screening/providing weight management information?

8. Which of the following best describes the majority of your patients? Check one.

Do the majority have:

Medicaid

No insurance

Private insurance

Don't know

9. Which measure do you most consistently use to gauge weight status in pediatric patients?
Check one.

BMI

Weight

Visualization of the patient

Other

10. What other measure do you use to gauge weight status?

11. During well child visits how often do you provide weight management education (exercise and diet recommendations)?

Every well child visit

Majority of well child visits

Rarely

Never

How often do you assess BMI on patients?

With every patient

1-2 patients a day

less than 5 patients a week

Never

12. How often do you refer patients identified as overweight or obese for comorbidity screening (for example, lab tests)?

Every patient

Rarely

Never

Not applicable

What screening labs do you perform, if any?

TSH and free T4

Total cholesterol, LDL and HDL

Liver enzymes

Glucose

A1c

None

Other

Check all that apply. If none, check the None box.

13. What other screening labs do you perform?

14. How many times per week do YOU get at least 30 minutes of cardiovascular exercise? Enter 0 if none.

_____ (times per week get 30 minutes exercise)

15. On average, how many servings of fruits and vegetables do YOU consume per day? Enter 0 if none.

_____ (# of fruits/vegetable servings per day)

16. On average, what are the time slots in your practice for well-child exams?

15 minutes or less

30 minutes or less

More than 30 minutes

17. During a typical week, how many pediatric patients do you personally see and treat? Your best guess is fine.

_____ (# pediatric patients see/treat per week)

18. Do you think you could benefit from educational materials regarding the appropriate screening for pediatric overweight or obesity issues?

No

Yes

19. Which of the following information do you think would be most important and would be most applicable for your practice regarding pediatric overweight or obesity? Check all that apply. Information regarding:

Screening guidelines (including comorbidity screening)

Referral guidelines

Educational materials, information and handouts for patients

Other information

20. What other information about pediatric overweight or obesity would be important?

21. Do you feel like you have a sufficient amount of resources within your practice and in the community to manage/treat a PEDIATRIC patient identified as overweight or obese?

No

Yes

22. Do you feel screening for pediatric overweight or obesity should be a part of every child exam?

No

Yes

Please use the space below to give any additional feedback or comments

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